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EXAMINER
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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Continuation Sheet**

**Item 11**

The following rejections are maintained for the reason of record.

***Claim Rejections - 35 USC § 102***

***Caren ('653)***

1. Claims 1, 2, 4, 6-10, 12, 13, 15-18, 20, 21, and 35-38 are rejected under **35 U.S.C. 102(a, e)** as anticipated by Caren et al (US 6,221,653; 04/24/2001; filing date 4/27/1999; cited previously). The previous rejection is maintained for the reasons of record as set forth in the previous office action.

***Discussion and Answer to Argument***

2. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

*Applicants argue the Caren reference does not teach depositing a "protein reagent". (Reply. p.7, para 1).*

As discussed in the previous Office action, the Caren reference teaches the followings:

"The reference further teaches the deposit fluid comprises binding agents (a member of a specific binding pair) such as proteins, enzymes and cell lysates (containing essentially protein mixtures) (e.g. Claim 3; Column 2, lines 28+; col. 4, lines 27+), which reads on the protein reagent of **clms 1, 7, 8, 12, 17, 22, 24, 25, and 36-38.**" (emphasis added).

Applicants' definition for the term "reagent" is broad and encompasses the protein containing "fluid" of the Caren reference, because Caren teaches the "fluid" comprise agents for binding, i.e. "used in a chemical reaction to detect, measure..." according to applicant's provided definition.

Applicants also provided recitations from the instant specification (Reply, p.7, para 5) for the process of sample analysis. However, the specific method steps are not recited in the instant claims. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "The fluid sample that is deposited on the array according to subject invention is a fluid sample that is suspected of containing an analyte of interest..."; Reply, p.7, para 5) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In addition, applicants have also made assertion about the reference's teaching such as "a fluid sample that may or may not actually contain the analyte of interest" without providing any supporting evidence. As discussed in the previous office actions as well as above, the Caren reference teaches the instant claimed method step of "deposit said quantity of fluid..." Applicants have not demonstrated any substantive and genuine differences or distinction between the reference's teachings and the instant claimed invention. Furthermore, the instant specification does not provide a specific definition for terms such as "protein reagent" (which is recited in the preamble of the instant claims and construed as intended use) and "quantity of fluid". It is not clear how the reference's

teachings are not encompassed by the broad definitions for the said terms as they are used in the art as well as the terms are used in the instant specification.

Caren ('469)

3. Claims 1, 2, 4, 6-10, 12, 13, 15-18, 20, 21, and 35-38 are rejected under **35 U.S.C. 102(e)** as anticipated by Caren et al (US 6,797,469 B2; 09/28/2004; filed 03/26/2001; earlier priority date 4/27/1999; cited previously). The previous rejection under 35 USC 102e is maintained for the reasons of record as set forth in the previous office action.

Discussion and Answer to Argument

4. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

*Applicants argue the Caren reference does not teach depositing a "protein reagent". (Reply. p.9).*

As discussed in the previous Office actions, the Caren reference teaches the followings:

"The reference further teaches the deposit fluid comprises binding agents (a member of a specific binding pair) such as proteins and enzymes (e.g. Claim 19; Column 2, lines 31+; col. 4, lines 33+), which reads on the protein reagent of **clms 1, 7, 8, 12, 17, 22, 24, 25, and 36-38.**"

Applicants traversed the above rejection with the same arguments as the traversal over the Caren ('653) reference. Applicants are respectively directed to the above discussion under Caren ('653) for answer to arguments.

***Claim Rejections - 35 USC § 103***

*Deeg*

5. Claims 1, 2, 4-10, 12-28, and 35-39 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Deeg et al (US 5,338,688; 08/16/1994; cited previously). The previous rejection is maintained for the reasons of record as set forth in the previous office action.

*Discussion and Answer to Argument*

6. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

*Applicants argue that the Deeg reference does not "disclose the front loading of a fluid into an inkjet head" (Reply, p. 10+).*

Although the '688 patent does not explicitly teach the step of "front loading said quantity of fluid into a thermal inkjet head ...", the claimed thermal inkjet head inherently performs "front loading" process. See MPEP 2112.02:

"Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the

device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986).”

The device used in the claimed method (or process) is the same as (i.e. a thermal inkjet head printing device) the device of the ‘688 patent without evidence to the contrary. The instant specification discloses the general characteristics of the “thermal inkjet heads” that are used for the claimed method (see p.6, [0016] of the instant spec.):

“Thermal inkjet heads finding use in the subject methods will generally have the following characteristics. The size of the orifice is sufficient to produce a spot of suitable dimensions on the substrate surface (described in greater detail infra), where the orifice generally has a diameter (or exit diagonal depending on the specific format of the ink jet head) ranging from about 1 to 1000 $\mu$ m, usually from about 5 to 100  $\mu$ m and more usually from about 10 to 60  $\mu$ m. The firing chamber has a volume ranging from about 1 pl to 10 nl, usually from about 10 pl to 5 nl and more usually from about 35 pl to 1.5 nl. The heating element ...”

These “characteristics” are possessed by the “thermal inkjet” described in ‘688 (e.g. an orifice having drop diameter of 75  $\mu$ m, and a firing chamber with at least 230 pl capacity, as well as a “heating element” for creating the air bubble; see col. 6, lines 60+ and col. 3, lines 30+ of the ‘688 patent). In addition, the instant specification also discloses that the device (the thermal inkjet) described in the ‘688 patent is known for “depositing bio/chemical agents such as proteins and nucleic acids” (p. 2, [0005] of the spec.). Furthermore, applicants have stated on record that “the Deeg apparatus may be capable of being front loaded...” (emphasis provided by applicants) in the Reply entered 9/21/06, at p. 8, last para.

The instant specification also discloses “the thermal inkjet device is front loaded with a fluid sample” with the term “the thermal inkjet device” referring to the devices described on p.6, [0016]. Thus, it can be logically concluded that the “thermal inkjet

head” of the prior art as described in the instant specification or the inkjet head of the ‘688 patent, “in its normal and usual operation, would necessarily perform the method claimed”.

Furthermore, the term “front loading” is not specifically defined, and is broadly used in the instant specification. For example, the instant specification states the followings:

“In this front loading protocol, the orifice is contacted with fluid under conditions sufficient for fluid to flow through the orifice and into the firing chamber of the head, where fluid flow is due, at least in part, to capillary forces. To assist in the flow of fluid in to the orifice, back pressure in the form of suction (i.e. negative pressure) may be applied to the firing chamber of the head to assist in the flow of fluid to into the orifice” (see [0017] of the specification).

Thus, the only required structural elements from this example of “front loading” described in the instant specification are: contacting the orifice with fluid, flowing the fluid through the orifice to the firing chamber, and the “flowing” is due to “capillary forces” and maybe additional back pressure.

Therefore, from the above description of the “front loading” procedure, it is reasonable to conclude that the “front loading” is mainly through capillary forces. It is known in the art that capillary force is an inherent property of narrow tube to draw a liquid upwards against the force of gravity (see the previously cited definition for “Capillary Action” from Wikipedia.org; 2006; attached to the previous Office action, mailed 7/28/06). Thus the “front loading” capillary action is an inherent property of the inkjet head due to the narrow tube of the nozzle or firing chamber. In other words, whenever the inkjet head orifice, in its normal and usual operation, is in contact with a

fluid, the inherent function of capillary suction (or “front loading”) is necessarily performed by the inkjet head.

Furthermore, the instantly claimed “thermal inkjet head” used in printing ink or biological material, “in its normal and usual operation”, would “necessarily perform” back or negative pressure to retain fluid in the nozzle and firing chamber. For example, Cowger et al (US 5,409,134; 4/25/1995) teaches that “back pressure at the print head must be at all times strong enough for preventing ink leakage” and “a slight back pressure at the print head to prevent ink leakage” in thermal inkjet heads (co. 1 of ‘134). Thus, thermal inkjet heads are known to operate under “back” or “negative” pressure in addition to the capillary force, so that the fluid or ink in contact with the orifice is suctioned in the head before ejection.

*Applicants also seem to argue that because the preferred embodiment of the Deeg reference is to load fluid through a reservoir, the reference does not explicitly teach “front loading”. (Reply. pp. 12+).*

However, the court has provided the followings:

“The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain.” In re Heck, 699 F.2d 1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)).”



Because the cited reference inherently teaches “front loading” with or without back pressure, the Deeg reference anticipates or renders obvious the claimed invention.

***Double Patenting***

‘469

7. Claims 1, 2, 9 and 11 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 19-21 and 23 of U.S. Patent No. 6,797,469 B2 (hereinafter referred to as ‘469 patent). The previous rejection is maintained for the reasons of record.

*Discussion and Answer to Argument*

8. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

Applicants traversed the ODP rejection with the same argument as the traversal over the 102 rejection above. (Reply, p.13).

Applicants are respectively directed to the above discussion for answer to arguments.

‘653

9. Claims 1, 2 and 9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 5-7, 9, 10, 12, 17, and 19 of U.S.

Patent No. 6,221,653 B1 (hereinafter referred to as '653 patent). The previous rejection is maintained for the reasons of record as set forth in the previous office action.

*Discussion and Answer to Argument*

10. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

Applicants traversed the ODP rejection with the same argument as the traversal over the 102 rejection above. (Reply, p.14).

Applicants are respectively directed to the above discussion for answer to arguments.

*'740*

11. Claims 1, 2, 9 and 11 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 9, 11-13, 15 and 18 of U.S. Patent No. 6,656,740 B1 (hereinafter referred to as '740 patent). The previous rejection is maintained for the reasons of record as set forth in the previous Office action.

*Discussion and Answer to Argument*

12. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

*Applicants argue the '740 patent does not claim the method step of "depositing a quantity of fluid containing a protein reagent" (Reply, p.14).*

As discussed in the previous office action, the '740 patent claims depositing "biopolymer fluid" (see Claim 1 of '740 for example), which the biopolymer fluid read on the "fluid containing a protein reagent" because the '740 defines the term "biopolymer" to include protein (see, '740, col.4, lines 20+).

'043 and '580

13. Claims 1, 2, 6, 7, and 8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 7 and 11-19 of U.S. Patent No. 6,323,043 B1 (hereinafter referred to as '043 patent) and claims 1, 2, 4 and 6 of its related U.S. Patent No. 6,884,580. The previous rejection as set forth in the previous office action is maintained for the reasons of record.

Discussion and Answer to Argument

14. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

*Applicants argue the '043 or the '580 patent does not claim the method step of "depositing a quantity of fluid containing a protein reagent" (Reply, p.15).*

As discussed in the previous office action, the '043 patent claims depositing "biopolymer fluid" (see Claim 1 of '043; claim 1 of '580, for examples), which the biopolymer fluid read on the "fluid containing a protein reagent" because the '043 defines the term "biopolymer" to include protein (see, '043, col.5, lines 60+).

'266

15. Claims 1-4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 8, 12, 14, 15 and 18 of U.S. Patent No. 6,242,266 B1 (hereinafter referred to as '266 patent). The previous rejection is maintained for the reasons of record advanced in the previous office action.

Discussion and Answer to Argument

16. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record). Each point of applicant's traversal is addressed below (applicant's arguments are in italic):

*Applicants argue the '266 patent does not claim the method step of "depositing a quantity of fluid containing a protein reagent" (Reply, pp.15-16).*

As discussed in the previous office action, the '266 patent claims depositing "biopolymer fluid" (see Claim 1 of '266 for example), which the biopolymer fluid read on the "fluid containing a protein reagent" because the '266 defines the term "biopolymer" to include protein (see, '266, col.6, lines 11+).

/Jon D. Epperson/  
Primary Examiner, AU 1639